

INSTRUCTION FOR INSTALLATION AND MAINTENANCE
**PIN AND SLEEVE RECEPTACLES, PLUGS AND CABLE CONNECTORS (30, 60, 100 AND 150 AMPERE)
 FOR USE WITH COPPER CONDUCTORS ONLY**
Electrical Rating

Maximum Voltage: 600 VAC at 50-400Hz, 250V DC; Maximum.
 Continuous Current: 30, 60, 100 or 150 Amperes.

APPLICATIONS

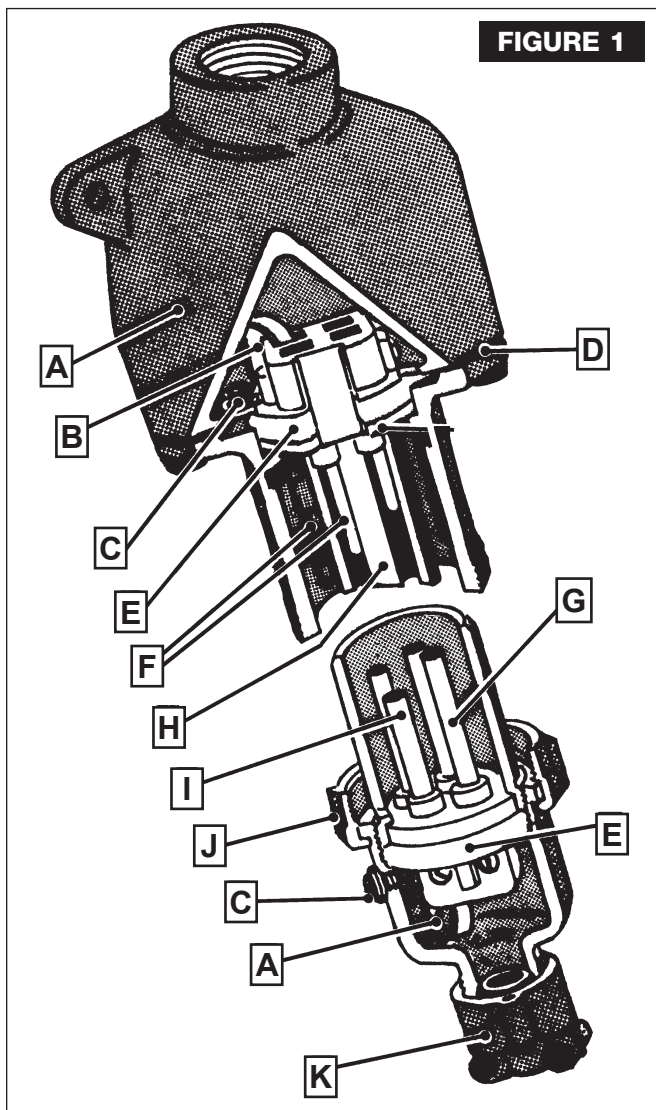
- Designed to supply power to portable or fixed electrical equipment such as motor generator units, welders, pumps, compressors and similar apparatus.
- Ideal for use on shipping docks, ports and other "ship to shore" applications.
- Suitable for use in locations where a watertight enclosure is required.
- Rough usage construction.

FEATURES

- A. Rugged.** All components have copper-free aluminum housings.
- B. Two Grounding Styles.** Copper grounding straps in Style 2 receptacles and plugs (shown) ground thru shell and extra pole. Style 1 thru shell only.
- C. Convertible.** Two screws secure receptacle insulator block; one screw secures plug insulator block. Permits easy conversion to reverse service (30, 60, 100A).
- D. Watertight.** Mounting box sealed with gasket. Receptacle and connector seals with screw cap or plug. Plug sealed when in receptacle or connector
- E. Insulator Blocks.** Provide high mechanical and dielectric strength, very low "arc tracking".
- F. Positive Ground.** Grounding detent springs assure maintained ground contact.
- G. Self-Aligning.** "Floating" plug and receptacle contacts automatically align.
- H. Arcing Confined.** Contacts made and broken in snuffing chamber. In emergency, plugs can be withdrawn under full rated loads (30A thru 100A). Positive polarization helps prevent mismatching plugs.
- I. Positive Contacts.** Brass contacts have integral springs for positive maintained electrical contact.
- J. Clamping Ring, Plug.** Neoprene gasketed, 30A, 60A, 100A, 150A plugs thread onto receptacle for watertight union.
- K. Positive Cable Clamp.** Plugs supplied with neoprene bushing and a reversible cable clamp for firm, watertight fit over a wide range of cable diameters. Locking screw prevents Gland Nut from turning.

COMPLIANCES:

UL Standards 1682, 1686 (all) and 1010/1203 (plugs only);
 CSA Specification C22.2 No. 182.1
 Enclosure Type 3, 4, 4X



Style 2 Plugs, Receptacles and Cable Connectors are equipped (since mid-1990) with contacts designed to provide a safety polarization means called "**Controlled Length**" contacts, as indicated on product nameplate. This feature will not allow the plug grounding contact (Style 2) to touch an energized receptacle "line" contact in the event the plug becomes damaged and/or loses its primary polarization means and/or is rotated into the incorrect position.

**RETAIN THIS INSTRUCTION SHEET FOR
 FUTURE REFERENCE.**

**READ INSTRUCTIONS CAREFULLY AND
 WITH FULL UNDERSTANDING FOR SAFE
 INSTALLATION AND OPERATION.**

Except as expressly provided by Larson Electronics in writing, Larson products are intended for ultimate purchase by industrial users and for operation by persons trained and experienced in the use and maintenance of this equipment and not for consumers or consumer use. Larson warranties do not extend to and no reseller is authorized to extend Larson's warranties to any consumer.

CAUTION

To prevent ignition of hazardous atmospheres do not use in Class 1, Group F locations that contain electrically conductive dusts.

WARNING

Use cable with diameters within the specified range given in TABLE B for any given grommet size and clamp orientation. Failure to do so may result in over stressed wire terminations which could cause the conductors to pull out of the contacts and cause serious/fatal injuries due to electrocution or fire.

WARNING

Do not modify these devices in any way.

Replace any missing or broken parts with proper replacements parts from manufacturer. Modification of these devices or substitution of parts with non-standard parts may result in serious/fatal personal injury from electrocution.

CAUTION

Receptacles for use in hazardous (classified) locations as defined in the National Electrical Code and the Canadian Electric Code. Portable utilization equipment connected to the plug must be approved for use in the intended location.

Equipment **NOT** approved for use in hazardous locations as defined by the N.E.C. and C.E.C., connected to a plug must be used in non-hazardous locations. If used in a hazardous area, the equipment must be approved for that location, or the area must be purged of the hazard and declared non-hazardous.

WARNING

If any parts of the plug, receptacle or cable connector appear to be missing, broken or show signs of damage;

DISCONTINUE USE IMMEDIATELY!

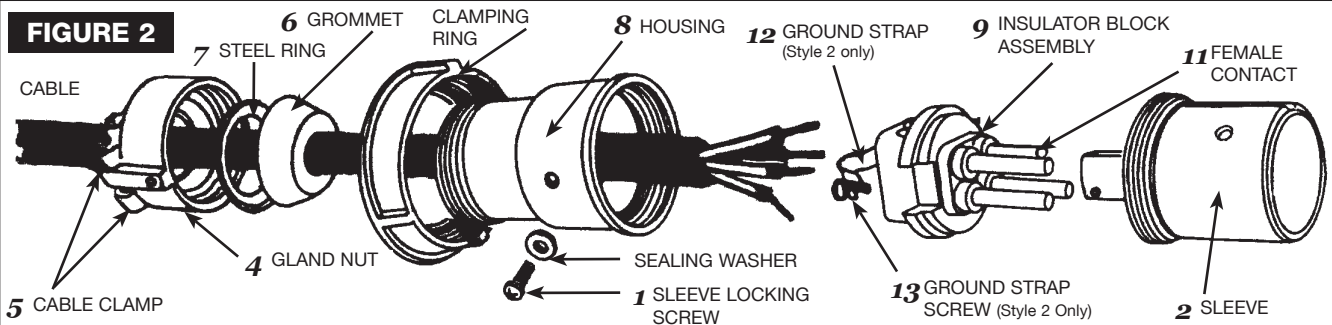
This condition could cause serious/fatal personal injury due to electrocution and/or equipment damage. Repair with proper replacement part(s) before continuing service.

WARNING

Electrical power must be turned "OFF" before and during installation and maintenance. **Failure to do so may result in serious/fatal injuries due to electrocution.**

Plug is watertight when inserted in proper receptacle or cable connector and the clamping ring is fully tightened.

**INSTALLATION INSTRUCTIONS FOR PLUGS:
30A, 60A, 100A, 150A:**



1. Disassemble plug as shown in Figure 2 by removing sleeve locking screw **1**, and unscrewing gland nut **4**. It is not necessary to remove female contacts **11** from insulator block **9**. In case of STYLE 2 insulator block, make sure grounding contact with strap is in the proper location. See Figure 4.
2. Strip the cable jacket and individual conductors per Table "A".
3. Select proper grommet **6** and cable clamp **5** orientation per Table "B". Reversible cable clamps (just removescrews, flip over and replace screws) permit wide cable range.



4. Slide gland nut **4**, steel ring **7**, proper grommet **6** and housing **8** in that order back over cable.
5. Connect wires to proper terminals in insulator block by loosening (but not removing) terminal pressure screws on contacts. Then insert conductors including all strands into contact terminals according to your established wiring scheme. Tighten terminal pressure screws to a torque value per Table C. (Conductors must bottom in contact terminal well and insulation must extend below surface of insulator block.) See Figure 3.

Continued on next page...

- Position insulator block assembly **9** in sleeve **2**. For STYLE 2, attach ground strap **12** to sleeve **2** with ground strap screw and torque in 25 in. lb. min. / 30 in. lb. max. Screw the combination of sleeve and contact block assembly into housing **8** until the threaded hole in sleeve **2** is aligned with the hole in housing **8**. Thread in sleeve locking screw **1** including sealing washer and torque to 30 in. lb. min. / 35 in. lb. max.
- Slide grommet **6** and steel ring **7** up and as close to housing as possible. Force cable into wiring cham-

ber to induce a minimum of 1/8 in. slack in the wire between clamp and terminal. Screw gland nut **4** onto housing **8** and torque per Table "C". Finally torque the set screw **3** (for applicable model only) in place at 10 in. lb. min. / 15 in. lb. max.

- Refer to Table "B" and Figure 8 for correct cable clamp orientation. Tighten cable clamp screws to 30 in. lb. min. / 35 in. lb. max. Screws were lubricated at the factory but if needed, relubricate with a good grade of grease.

WARNING

A wire scheme must be followed so that the same color wire is always put into the same numbered contact opening in all plugs, connectors and receptacles in the system. This will help insure correct polarity for the system and helps to eliminate possibilities for equipment damage and/or personal injuries due to electrocution or fire.

ELECTRICAL TESTING

Do not connect to power until conducting the following electrical tests.

- Test continuity of wiring to verify correct phasing and grounding connections.
- Measure insulation resistance to be sure system does not have any short circuits or unwanted grounds.

FIGURE 3

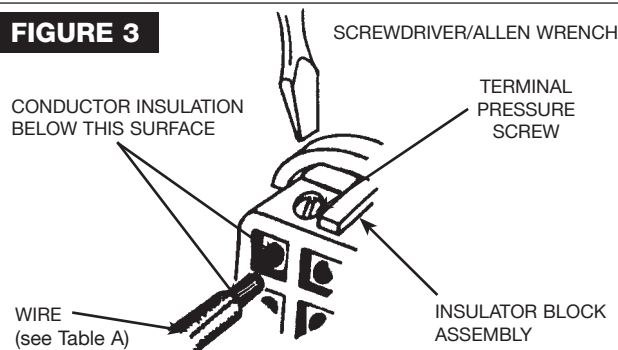
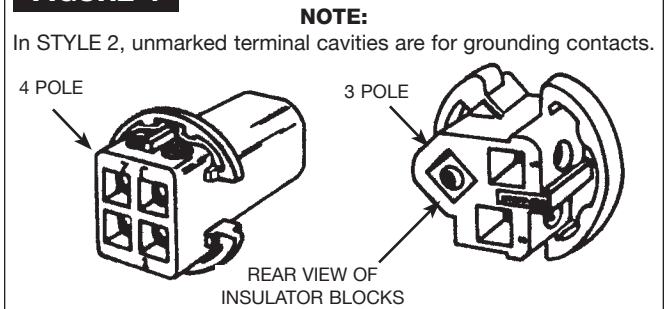
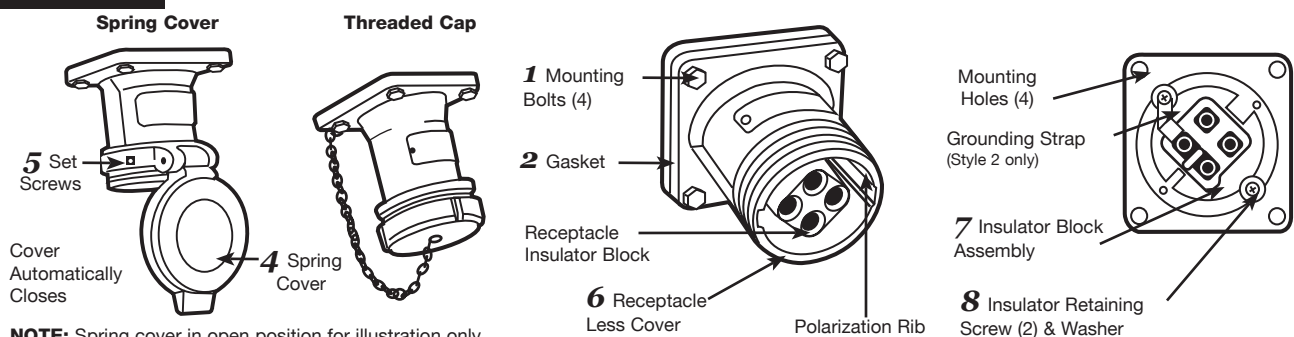


FIGURE 4



INSTALLATION INSTRUCTIONS FOR RECEPTACLES: 30A, 60A, 100A, 150A

FIGURE 5



NOTE: Spring cover in open position for illustration only.

Spring Cover and Screw Cover receptacles are threaded to accept the clamping ring of the plug. The ring threads onto the receptacle to form a watertight assembly with plug in use and also to prevent plug fallout. When the plug is withdrawn, the gasketed Spring Cover automatically closes tightly against receptacle opening providing weather-proof protection.

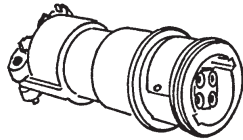
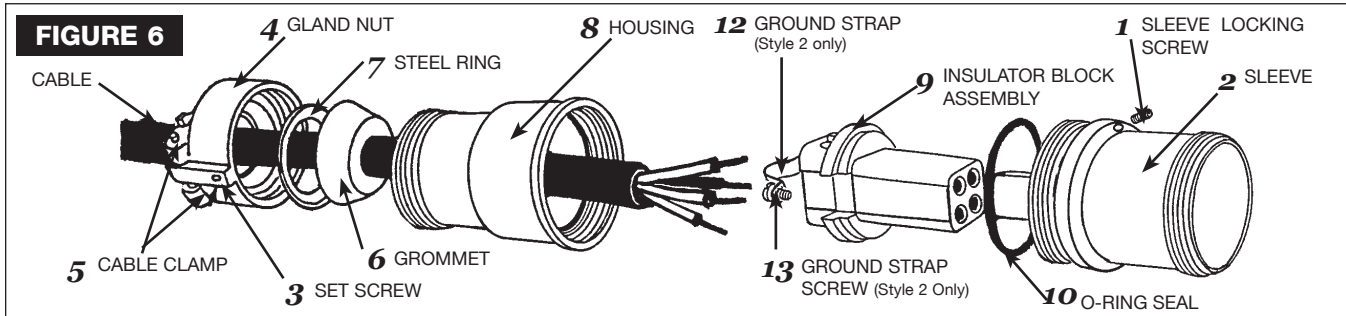
- Follow instruction given in paragraphs 2 and 5 for plugs.
- Insert insulator block assembly **7** into receptacle housing **6** and install two retaining screws with washers **8**. Torque to 30 in. lbs. min. / 35 in. lbs. max.

3. Mount receptacle to previously installed back box using mounting bolts **1** supplied with receptacle and torque to 30 in. lb. min. / 40 in. lb. max. Mounting screws provide electrical continuity between receptacle housing **6** and back box. Make sure gasket **2** is positioned correctly to make a watertight seal.

- The spring cover can be positioned to open in any direction by loosening the set screws **5**, repositioning the spring cover **4**, and retightening the set screws **5**. Torque set screws **5** to 7 in. lb. min. / 12 in. lb. max.

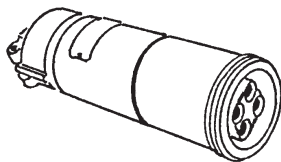
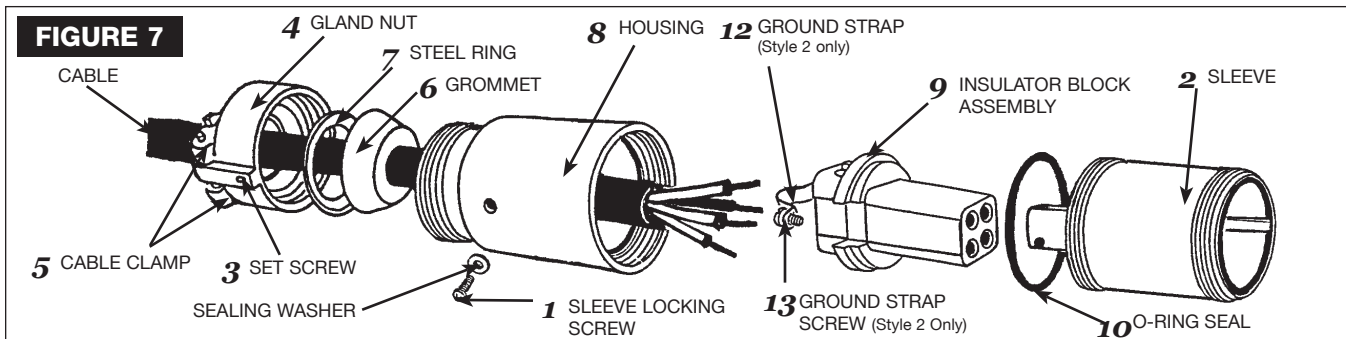
INSTALLATION INSTRUCTIONS FOR RECEPTACLES: 30A, 60A, 100A

30A CABLE CONNECTOR



1. Disassemble connector as shown in Figure 6 by loosening sleeve locking set screw **1** and gland nut set screw **3**, then unscrew sleeve **3** and gland nut **4**.
2. Follow instructions given in paragraphs 2, 3, 4, 5 and 6 for the plugs.
3. Screw the combination of sleeve and insulator block assembly into the housing **8** until the gasket **10** is tightened between the sleeve **2** and the housing **8**.
4. Tighten sleeve locking set screw **1** and torque to 30 in. lb. min. / 35 in. lb. max.
5. Follow instruction given in paragraphs 7 and 8 for plugs.

60A/100A CABLE CONNECTOR



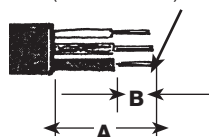
1. Disassemble connector as shown in Figure 7 by loosening sleeve locking set screw **1** and gland nut set screw **3**, then unscrew sleeve **2** and gland nut **4**.
2. Follow instructions given in paragraphs 2, 3, 4, 5 and 6 for the plugs.
3. Screw the combination of sleeve **2** and insulator block assembly **9** into the housing **8** until the "O"-ring **10** seats against the sleeve **2** and housing **8**. At this point continue to screw the two components together until the hole in the housing is aligned with the threaded hole of the sleeve **2**. Replace sleeve locking screw **1** and torque to 30 in. lb. min. / 35 in. lb. max.
4. Follow instruction given in paragraphs 7 and 8 for plugs.

TABLE A DIMENSIONS IN INCHES

Terminal Wire Range and Stripping Guide, Copper Conductors Only

Amperes Ratings	Strip Length (inches)		Terminal Wire Range (AWG)	
	Jacket	Conductor		
	A	B	Building	Extra Flex
30	1-12	1/2	#10 - #6	#10 - #8
60	1-7/8	5/8	#6 - #2	#6 - #4
100	2-1/2	7/8	#4 - #1	#4 - #2
* 150 (CD)	2-1/2	7/8	#2 - 1/0	#2 - 1/0
* 150 (DE)	4.0	7/8	#2 - 1/0	#2 - 1/0

Grounding Conductor (Green or Bare)



* For 150 AMP Rating:

Size AWG	Temperature Rating of Conductor	
	75°C	90°C
#2	115 AMP	130 AMP
#1	130 AMP	150 AMP

CAUTION

Plug and cord connectors are rated for use with Type SO or equivalent portable cord with copper conductors ONLY.

CAUTION

Care must be taken not to cut into the individual conductor insulation when removing the outer cable jacket and to not damage the conductors when removing individual wire insulation. Failure to do so will seriously degrade the electrical properties of the cable and may produce overheating/electrical hazard due to electrocution.

WARNING

Use cable with diameters within the specified range given in TABLE "B" for any given grommet size and clamp orientation. Failure to do so may result in over stressed wire terminations which could cause the conductors to pull out of the contacts and cause serious/fatal injuries due to electrocution.

TABLE B

DIMENSIONS IN INCHES

Grommet Selection and Cable Clamp Orientation Guide (figure 8)

AMP SIZE & CAT. NO.	CABLE DIA. RANGE (In.)	GROMMET I.D. (in.)	REVERSIBLE CLAMP POSITION
30 AMP			
	.390-.625	.625	1
	.625-.812	.812	1
	.812-1.125	1.125	1
60 AMP			
	.625-.812	.812	1
	.812-1.125	1.125	1
	1.125-1.375	1.375	2*
100 & 150 (CD) AMP			
	.875-1.062	1.062	1
	1.062-1.281	1.281	1
	1.281-1.562	1.562	2
	1.562-1.906	1.906	2
	1.25-1.28	1.28	1
	1.28-1.56	1.56	1
	1.56-1.91	1.91	3
	1.91-2.19	2.19	2

*Clamps B & C were replaced by clamp BC; also C & D replaced by CD. Some products with a B or C catalog number suffix were shipped with a BC clamp installed. Same for C or D but with a CD clamp.

Figure 8

To reverse cable clamp, just remove screws, flip over and replace screws. Permits a wider cable range. Convenient in installations having different cable sizes.



1st POSITION



2nd POSITION



3rd POSITION

Plugs are supplied with four bushings to accommodate a wide variety of cable diameters.



For minimum torque tightening, see Table C.

Table C

Gland Nut and Terminal Tightening Torque Guide

Device AMP Rating	Min. Tightening Torque (in. lb.)	
	Gland Nut	Terminal
30 A	60.0	35.0
60 A	60.0	40.0
100 A	72.0	50.0
150 A (CD)	72.0	80.0
150 A (DE)	80.0	80.0

Maintenance

Electrical and mechanical inspection of all components must be performed regularly. It is recommended that inspection be performed a minimum of once a year.

WARNING

If any parts of the plug, receptacle or cable connector appear to be missing, broken or show signs of damage;

DISCONTINUE USE IMMEDIATELY!

This condition could cause serious/fatal personal injury due to electrocution and/or equipment damage. Repair with proper replacement part(s) before continuing service.

1. Inspect all contact wire terminals for tightness. (Retorque). Discoloration due to excessive heat is an indicator of possible problems and should be thoroughly investigated and repaired as necessary.
2. Check grounding and bonding for correct installation and secure connection. (**Re-torque**)
3. Check gaskets for deterioration and replace if necessary.
4. Clean exterior surfaces making sure nameplates remain legible.

5. Inspect gland nut and cable grip tightness to ensure proper cord/cable gripping.
6. Torque all screws as described in instructions before re-using device.
7. Inspect housing parts and replace those which are broken or excessively worn.
8. Check contacts for signs of excessive arcing or burning and replace if necessary.

In addition to these required maintenance procedures, we recommend an Electrical Preventive Maintenance program as described in the National Fire Protection Association Bulletin NFPA No. 70B.

ELECTRICAL RATING

Maximum Voltages: 600 VAC @ 50-400Hz, 250V DC; Maximum continuous current: 30, 60, 100 or 150 Amperes.

Retain this Instruction Sheet for Future Reference